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BIM Steps
BIM Solution
Interview About BIM
Undfrstanding BIM Stages
The Business Value of BIM

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Team Work

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Introduction

Challenges and problems in the field of constructions are daily things that are associated with design, construction and management work, so whoever works in the field of construction and infrastructure in the different specialties had faced a lot of those challenges which had no solutions in the past. But BIM evolution had a great impact in finding successful and radical solutions to many problems that specialists have been looking at with despair and helplessness. BIM development in the last two decades in Europe, America and other countries had a profound impact on changing the concept of construction and its management, which positively affected the quality of construction while reducing the cost and time, which also led to increase customer and user satisfaction. As well as the emergence of many modern applications that will change not only the construction industry but the whole world around us.
These applications include, but not limited to, 3D printing, virtual reality, simulation, and some applications which helps to control quality and monitor the development of constructions. As well as integrating many technological applications with BIM to get the most benefit from these applications; examples are RFID, Barcode, Sensors, Virtual Reality, GIS, and Satellite images.

However, despite the remarkable development achieved by BIM in many countries around the world, BIM and its sciences are still in our Arab region in basic stages, which did not reach the stage of full maturity and the largest evidence that BIM and its sciences studied in a limited number of Arabic universities.
Thus, many of those who have been caught by the love of BIM resorted to foreign institutes and universities in Europe, America, Australia and Canada to convey those academic, scientific and practical experiences and share them with their team in the Arab region.

Regarding the practical and cognitive side, specialists in BIM field know that one of the biggest challenges facing BIM transformation in any level (governments - institutions of different sizes and specialties - individuals ... etc.) is to accept the change because BIM in its being is not like many technological systems that require only replacing or renewing an old software program with a modern program and training users on it; but BIM requires far more than that, as changing perceptions is one of the biggest challenges facing BIM transformation during a journey of change. The transformation of BIM during the journey of change at any level depends on three main pillars: People, Process, and Technology.

Many specialists believe that the most important element of the above three changes is People, especially the senior leadership which should support BIM transformation at all stages because they are the ones who affect negatively or positively on the other two elements. It is known through previous experiences that the journey of change for BIM is a relatively long journey. Therefore, managing the change requires awareness, preparation, and understanding of the challenges and the requirements of each stage or change becomes almost impossible or unreal change, which is called the Hollywood Bim.

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UNDERSTANDING BIM STAGES

Dr. bilal succar

Many industry discussions affectionately expand on BIM's far-reaching deliverables: seamless collaboration, construction sequencing, shareable databases and fully integrated project delivery. While all these possibilities are foreseen today and are becoming more readily accessible as we speak (type), it is important to understand the deployment road ahead. Such an understanding will help us focus on the task at hand, better allocate available resources and prepare for the BIM-flavoured future. The previous episode has described the 1st dimension of the BIM Framework – 'horizontal axis' representing AEC players and their deliverables. It is now time to introduce the 2nd dimension – 'vertical axes of BIM adoption. This episode intends to identify deployment milestones or 'stages' that AEC players pass through on their way to fully integrated practices. There are three stages/milestones:

- BIM Stage 1: Object-based modelling
- BIM Stage 2: Model-based collaboration
- BIM Stage 3: Network-based integration

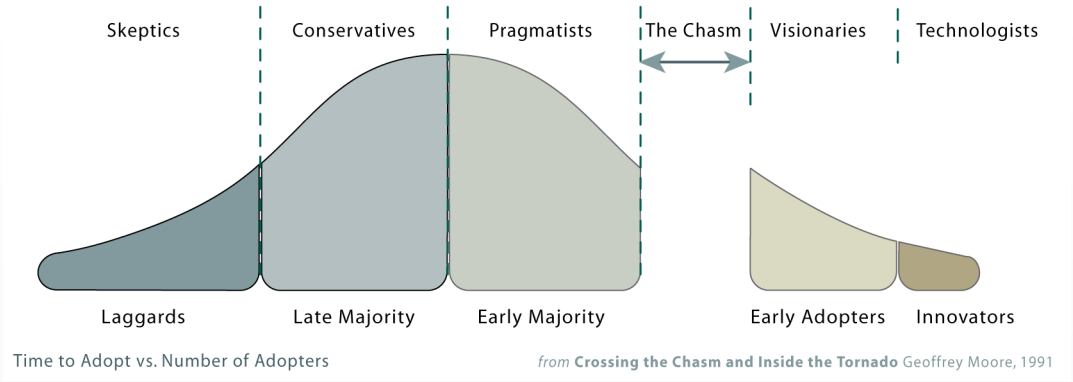
Note that each of these stages is further subdivided into sequential steps. What separates 'stages' from 'steps' is that BIM Stages are transformational or radical[1] changes while BIM Steps areincremental[2] ones within them. In this post, we'll focus our attention on identifying the transformational stages within BIM Nodes. We'll do that after briefly describing the Pre-BIM status which insistently prevails within the AEC industry.

The Pre-BIM Status:

At the Policy front, the Pre-BIM status is characterised by adversarial relationships as contractual arrangements encourage risk shedding and over-the wall interactions. Moving to the Process front, there are huge dependencies on 2D documentation to describe 3D reality with all the problems this entails. Communication between different Players is less than adequate and project teams dismantle as projects reach a conclusion. Technology investment is low and data exchanges suffer from severe lack of interoperability[3] between software applications...this surely cannot continue!

2D to 3D migration....BIM Stage 1:

After being wholly dependent on hand sketches, CAD and 3D visualisations, an increasing number of companies decide to cross the innovation chasm and invest in the object-based BIM applications (Figure 8.1).



Time to Adopt vs. Number of Adopters

from **Crossing the Chasm and Inside the Tornado** Geoffrey Moore, 1991

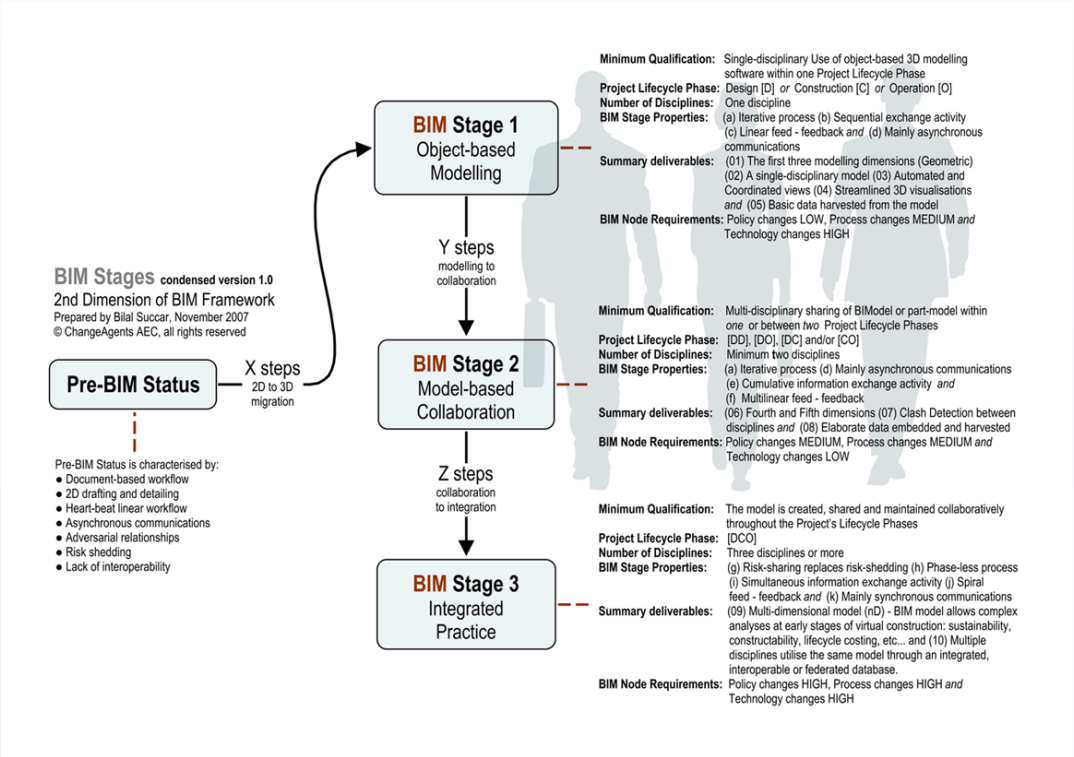
They quickly start to generate coordinated 2D documents and 3D visualisations from the BIM model but the parameter-rich model itself is not shared with other disciplines. Three-dimensional views and light-weight models (that may include object metadata but not active parameters - DWF, NWD, 3D PDF, KML files and the like) become the new phrases within a rejuvenated communication language. Through their adoption, these companies undergo 'mild' process change as they start generating a plethora of 3D views, quantities, specifications, what-if scenarios and other deliverables from the semantically-rich model. Since the BIM model is still single-disciplinary and the deliverables are mostly CAD-like documents, existing contractual relationships and liability issues persist....but not for long.

From modelling to collaboration...BIM Stage 2:

Two disciplines, each 'owning' a semantically-rich model, decide to collaborate. They exchange and share models/databases which may not include geometry (think of Gantt charts, assets and environmental databases as examples of shareable databases). The two companies may jointly co-author a single database (example using 'worksets' in Autodesk® Revit®), link two different proprietary formats (example linking Digital Project® to a Primavera® database) or exchange non-proprietary files (example IFC, CIS2 or SDNF files). This 'interopation' allows them to perform 4D time-studies, interdisciplinary clash detection and generate an impressive array of analysis-driven deliverables. It is here where 'traditional' contractual relationships, risk models and 'tried and tested processes' start to show signs of significant strain and – with the absence of clear policy guidelines - nascent imaginative solutions.

From collaboration to integration...BIM Stage 3:

This fulfillment of this stage is the compilation of all construction-efficiency dreams and BIM philosophies. At this stage, project lifecycle phases dissolve substantially and players interact in real-time to generate real benefits from increasingly virtual workflows. At this Stage, existing and fast improving technologies play enabling roles and one set of technologies play a pivotal role: the increasingly available Model Server, replication or other model-federating solutions. These specialised network-based technologies store, share and control multidisciplinary input/output from participating stakeholders. It is here where current contractual policies and project processes lose their sync with technological possibilities. Of course and over time, processes evolve and policies get developed to enable the full potential of semantically-rich models and externally references databases...it may be a long road ahead of us.



The interesting thing about all these Stages is that necessary technology infrastructure currently exists or is being developed. Whether we're discussing software, hardware or networks, all are emerging and maturing quite rapidly. Processes (albeit experimental) are starting to follow as innovative companies increasingly ally together and push the frontier. However, the biggest absentee is still the many Policy players (refer to classification in Episode 7) who are slow to react and generate the necessary guidelines, regulations, liability protection and educational programs necessary for systematic progress.

While Stage 1 needs just a BIM application and a champion and Stage 2 needs two players and the will to collaborate, Stage 3 needs much more than that. The Integrated Practice will need a systematic understanding followed by systematic consolidation of all relevant Technologies, Processes and Policies...It may be a long deployment road ahead of us but it's surely a scenic drive!

BIM STEPS

Dr. bilal succar

This post is about BIM Steps, those micro changes needed to implement Building Information Modelling within an organisation and then - by osmosis - throughout the whole industry. But before we introduce BIM Steps and in response to feedback received, I'll partially revisit the BIM Stages topic (Episode 8) in an effort to invite more discussion.

BIM Adoption: Stages and Steps

The adoption of BIM by an organisation will not happen unintentionally and definitely not in a single giant leap. In fact, it will be deployed through intentional decisions passing through major milestones referred to as BIM Stages. These stages – if well defined - are very useful to understand BIM concepts and visions but are - on their own - not usable in implementation. Further subdivisions are needed: smaller incremental changes that each organisation can make to reach each major Stage, mature within it and then attempt to reach another. These 'feetstones' or micro objectives are called BIM Steps. The difference between BIM Stages and Steps is that stages are radical or transformational changes while steps are incremental/evolutionary changes or maturity levels.
But why do we need to define stages to start with?

Need for BIM Stages

BIM Stages - as introduced in BIM ThinkSpace Episode 8 - are part of a 'BIM Framework' and an underlying 'BIM Theory'. I will not burden the blog readers with these but I want to highlight that Stage numbers, their definitions and underlying structures are based on 'something' more elaborate than a personal experience. The importance of BIM Stages lies in their observed ability to facilitate BIM deployment within organisations and – more generally - allow different industry stakeholders to:

- Agree on a common vision (any defined vision can be agreed upon; undefined visions cannot...)
- Generate a simplified implementation roadmap for organisations to follow
- Simplify BIM terminology around fewer headings
- Identify incremental and achievable steps between major stages
- Provide benchmarks for business improvement
- Allow organisations to assess themselves and others

To generate the above optimistic deliverables, BIM Stages have been structured using five relentless rules – stages must be:

- Well defined (non-overlapping): BIM Stages should be unambiguous and non-contradictory. For example, an implementation step cannot exist in two Stages at the same time.
- Generically Applicable: BIM Stages should apply equally to all disciplines, across all project lifecycle phases (Design, Construction and Operations) and throughout the industry's hierarchy. So, whether you're an owner, architect, engineer, contractor, sub-contractor or facility manager – BIM Stages should apply equally to you. They should also apply equally to teams, organisations and the whole Architecture, Engineering, Construction and Operations (AECO) industry.
- Revolutionary (non-evolutionary): BIM Stages are transformational or radical changes NOT incremental changes, usage types or maturity levels.
- Linear: BIM Stages are logical progressions and cannot be skipped.
- Cumulative: deliverables of one BIM Stage can be carried forward to the next Stage

Figure 1: BIM Stages - definitions

Which finally brings us back to BIM Steps, the main topic of this post...

BIM Steps: an introduction

The distance separating each of the above BIM Stages is quite large judging by the amount of changes expected at both organisational and industry levels. However, the passage from Pre-BIM to BIM Stage 1 and through each of the three stages is populated by many smaller steps that can be identified and thus fulfilled by willing organisations. These steps are either pre-empt a stage or are maturity levels within each of the stages.

Different step sets

The collection of steps that each organisation needs to fulfil to reach or mature within a BIM Stage across the continuum from pre-BIM to Integrated Project Delivery is driven by different perquisites for, challenges within and deliverables of each stage. It is therefore important to identify these different step sets:

- A steps from pre-BIM Status (fixed starting point) leading to BIM Stage 1
- B steps from BIM Stage 1 maturing towards BIM Stage 2
- C steps from BIM Stage 2 maturing towards BIM Stage 3
- D steps are maturity levels within Stage 3 leading to Integrated Project Delivery1 – a continuously evolving target!

Three BIM Stages: a reminder

As a reminder (please read Episode 8 before continuing), BIM implementation or BIM maturity levels can be subdivided into three consecutive stages:

BIM Stage 1: object-based modelling or MODELLING for short
BIM Stage 2: model-based collaboration or just COLLABORATION
BIM Stage 3: network-based integration or just INTEGRATION

The Business Value of BIM

Getting Building Information Modeling to the Bottom Line BIM and Green Building A summary of BIM usage in Green Buildings in 2009.

Engr. Yasser Saeed Mohamed
Engr. Mohamed Ghattas

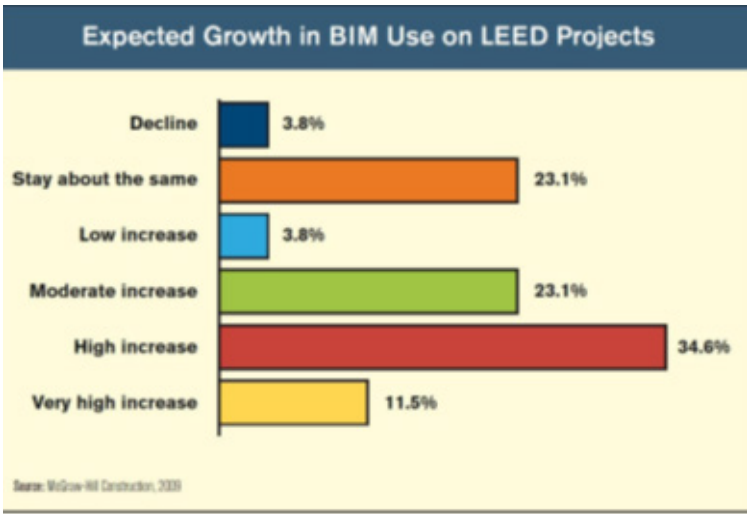
Green building professionals are still looking for how to implement BIM to improve the sustainability mechanisms and tools. Research has shown that the impact of using BIM applications is still limited to green building operations to date, but many projections confirm that the value of these applications will be very effective in the coming years. The results of the Smart Market Report "The Business Value of BIM" shows that (30%) of users believes that BIM is very useful in the output of high-performance buildings once completed, and more particular only few users (15%) who get a high level of BIM ability to analyze energy performance as a key element in building performance assessment.

However, users feel this effect is gradually increasing. Three in five users, especially experts (69%) believe that the value of using BIM will be very high to produce buildings that perform better within five years.

Expert's Opinions:

In a separate study, McGraw-Hill Construction conducted a survey of the companies related to the USGBC LEED-Platinum projects; the survey examines the impact of using BIM on green projects, emphasizing that today's situation is totally different than future expectations, the result was (10%) of the survey sample used BIM in the LEED-Platinum projects.

Most of these projects received the evaluation certificate in 2007 and 2008, indicating that the design and analysis phases were carried out years ago when the BIM was still limited in use, and one in three (30%) of the survey respondents still do not use BIM in LEED projects. Another (30%) of the sample are using BIM in (15%) of these projects, even though (69%) believes that they will use BIM in this type of project increasingly in the next two years, Finally (35%) believe that they will use BIM in this type of project with a significant increase.



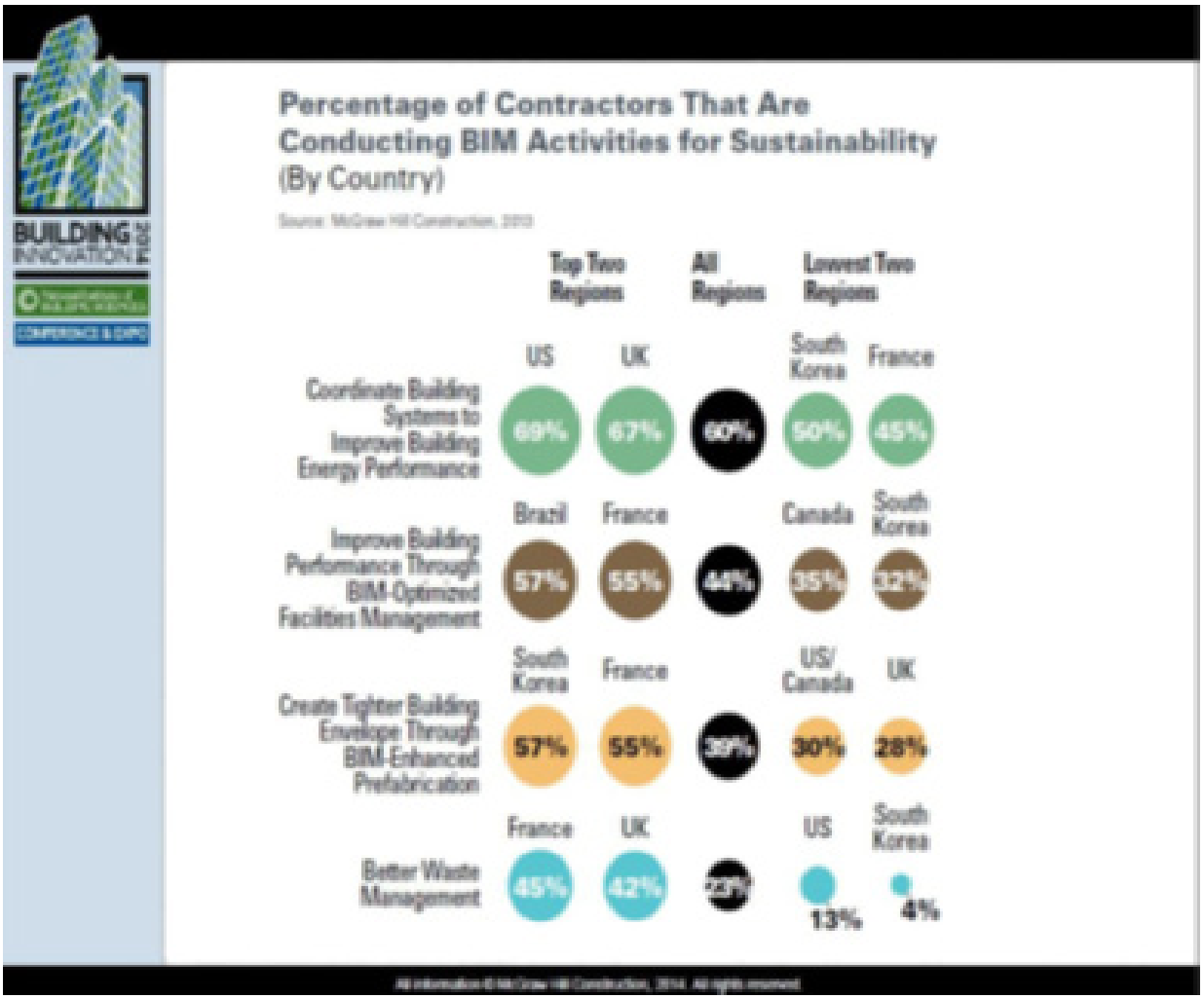
The required increase in BIM capabilities for analysis:

During the survey, some respondents explained that BIM is still an emerging technology that needs a lot of development in data analysis, especially in MEP. To better use BIM applications in sustainability projects, many have pointed out the need for more development in energy modeling and the ability to analyze more accurately to assess design alternatives and expected costs versus performance. In addition, some see the need to use technology more broadly in the future, especially if owners adopt this approach to obtain green building appraisal certificates such as LEED.
A representative of an architectural firm explained that although they used the BIM applications it was expensive and difficult but the opportunities would be better available in the future in this area. He said, "We believe that the use of BIM will reduce the number of employees and make teams more effective." We believe that the use of BIM will provide smarter, simpler, less technology-based buildings while working better in design processes and adaptability to its location.

An owner representative explained that BIM could contribute to the integrated design process adopted by LEED projects; he believed that all projects would use the BIM in the future, but if not integrated into the integrated design processes from the start of the project it will never be accepted by owners and the industry market. Others still believe that the day will come when BIM will play a key role in the green building to continue to optimize the operation and maintenance of buildings.

Although BIM is used in design and forecasting of energy consumption in buildings, it should be developed to help measure and record actual performance during operation in order to compare it to the design prototype. "A consultant says that this development will provide design team members with the information they can assess whether the building's performance will be similar to the design model or not.
BIM usage in the construction sector only in 2013

After reviewing the BIM market assessment in green buildings for 2009; we are following up the usage in 2013 through the same report by McGraw-Hill Construction in 2014, which shows the significant increment if BIM application during four years from the date of the first survey.



BIM usage effect on construction market in 2015.

MEASURING THE IMPACT OF BIM ON COMPLEX BUILDINGS

This study focuses specifically on how much BIM is contributing to improved outcomes in successive stages of design and construction on complex buildings (e.g., hospitals, laboratories, manufacturing), where execution is most challenging, risk is typically greatest and the need for improvements is critical. It establishes baselines for:

- The current level of positive impact BIM is generating on 23 distinct project outcomes in 10 categories.
- Metrics for the current degree of positive impact from BIM on six of the most important of these outcomes, and a forecast for future impact.
- The current state of model usage for facility management.
- Factors for success and obstacles influencing BIM's measurable impact.

High/very high impact ratings for BIM point to outcomes where the project team receives key benefits.

- **Improved constructability of the final design earns top ratings from 74% of contractors, along with most owners (68%) and architects (64%).**
- **Owners' top praise goes to increased ability to understand the design (73%), better construction documents (70%), and improved ability to plan construction phasing/logistics (70%).**
- **Engineers lead in citing improved quality/function of the final design (71%), which is also widely appreciated by owners (63%), and architects (62%).**

Examples of specific metrics for outcome improvements include:

- **40% of owners report that BIM accelerated project completion by a minimum of 5%, and 15% credit it with more than 10% schedule compression.**
- **41% of contractors report that BIM reduced final construction cost by at least 5%, with 8% achieving more than a 10% decrease.**
- **67% of contractors report a percentage of improved productivity, with 16% seeing increases of 25% or more.**

McGraw – Hill Construction performed a survey in 2015 aims to measure the effect of using BIM in the complicated buildings like (Hospitals, Giant Factories, Labs, … etc.), and this effect role in enhancing project output especially in the design and construction phase, It is advised to check the report in the below links.

Resources:

Smart Market Report 2009
https://www.trane.com/content/dam/Trane/Commercial/global/markets/Architect/building-information-modeling/SMR%20BIM%2009%20FINAL%20rev.pdf
Smart Market Report 2014
https://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/BSA/20140108_moa_jones.pdf
Smart Market Report 2015
https://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/Docs/BIMSmartMarketReport.pdf

Interview about BIM

-Could you please introduce yourself?

My name is Omar Selim, I am working as follow:

- BIM Coordinator in one of the leading consulting engineering company in the Middle East named (EHAF consulting engineer);
- Freelancer for BIM Implementation in many companies in gulf;
- Director of BIMarabia Magazine;
- Publication for Various technical articles published in BIMarabia blog and many books

about "art of architecture" and BIM.

-What aspects of BIM is your company currently implementing? How did you choose these aspects of BIM?

Bim programs is represent a quantum leap for our company. Where high technology allows in high quality to present, view and development projects under design and in construction phases.

in addition it is Allowing multiple and quick solutions to resolve design and construction problems which become are closer to reality.

BIM also allows assistance to be bound global and local codes and standard.

-Which BIM softwares you are using? Why did you choose this software?

We are using Autodesk products for our BIM Implementation such as:

- REVIT to create Structural models;
- NAVISWORKS for assembling the models, clash detection and preparing the Time table for the construction schedule; and
- VASARI & ECOTECT to insure the Sustainability.

We are using these softwares because they are easy to interface, The most sophisticated and compatible together.

-What benefits from using BIM in the projects that you are performing?

The benefits are huge from using the BIM in our projects, as example but not limited to:

- Reducing errors and omissions in the design phase;
- Improving collaboration with owner/design firms during the construction;
- Reducing the rework process;
- Improving the productivity;
- Improving communication; and
- Improving the quality control.

-How do you assess the production benefits of BIM?

Myassesstheproductionbenefitsof BIMit'saddbenfittotheprojectsbutneedtimein beginning as any new technology

-What is the impact of BIM on design/engineering (cost, time, overall project delivery time, quality)?

Some of the most important aspects of BIM ROI being measured by firms includes Improved project outcomes such as fewer RFIs and field coordination problems (79%) Better communication because of 3D visualization (79%) Positive impact on winning projects (66%).

-What are the critical factors in successful implementation of BIM?

First thing you should have qualified team, with plan and standards.

-Whataretheissuesandconcernsyouencounteringonprojectsthatincorporate BIM in design?

Before using any software we need to try it first in small project. And this project should cover most of the items in the big scale projects.

-What do you think about the risks emerging with BIM implementation, if any?

I think the risk is taking a major project with limited time and teamwork not qualified enough.

-Have you encountered concerns regarding model ownership?

No, model's ownership should belongs to the Owner/Client.

-What is your experience regarding defining the level of detail that is valuable to have in the design model?

Before start working we should have BIM Execution Plan (BEP) and it should be submitted firstly pre-contract to address the issues raised in the EIR and then with more detail post-contract award to explain the supplier's methodology for delivering the project using BIM.

When we publish the issue and with defined LOD.

And here are some definitions for LOD:

LOD 100 – The Model Element may be graphically represented in the Model with a symbol or other generic representation, but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e. cost per square foot, tonnage of HVAC, etc.) can be derived from other Model Elements.

LOD 200 – The Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

LOD 300 – The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

LOD 350 - The Model Element is graphically represented within the Model as a specific system, object, or assembly in terms of quantity, size, shape, orientation, and interfaces with other building systems. Non-graphic information may also be attached to the Model Element.

LOD 400 - The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, and installation information. Non-graphic information may also be attached to the Model Element.

LOD 500 - The Model Element is a field verified representation in terms of size, shape, location, quantity, and orientation. Non-graphic information may also be attached to the Model Elements.

-How did your company make the transition in adopting BIM practices? Did it have a significant impact on your typical design process?

My company using bim implementation gradually, step by step by bim implementation plan. Work in a small project with small team , not all staff.

-How much did it cost your company to get started with BIM? Have you tracked your return on investment?

Bim implementation cost us but it is not choice , it's necessary to stay in Competition, the cost like : software licenses, new hardware, new staff, software training, etc.
return on investment is make after the first project

-Have you encountered problems with the legal liabilities associated with implementing BIM? If so, how did you address them?

Until now no , we avoid any legal liabilities by clear contact

Web www.qc-sites.com

Big Data

Omar Selim
Mohamed Ghattas

Data Science is one of the most important branches of a large number of online services.
Data mining make it is easy to access information, and recently emerged an important term, the Big Data
Data is defined as an unorganized fact, in other words, the lowest level of information and knowledge, taken from observations, direct recordings and social activities, which in recent years have become so large that they are difficult to use and analyze in traditional ways to obtain information and knowledge.

Data can be divided into three types:
- Structured data: in the form of tables or databases for processing.
- Un-Structured data: The largest proportion of data is which that people generate daily from the text, image, video, messages, clicks, links to websites, etc.
- Semi-Structured data: structured data, but not designed in tables or databases.

What is the difference between data and information?
Information is the data which has been analyzed and interpreted and can be used to develop different relationships between phenomena and decision-making.
For example, employee data: name, date of birth, etc. are considered data.
While the extraction of newborns for a particular month to celebrate their birthday is information.

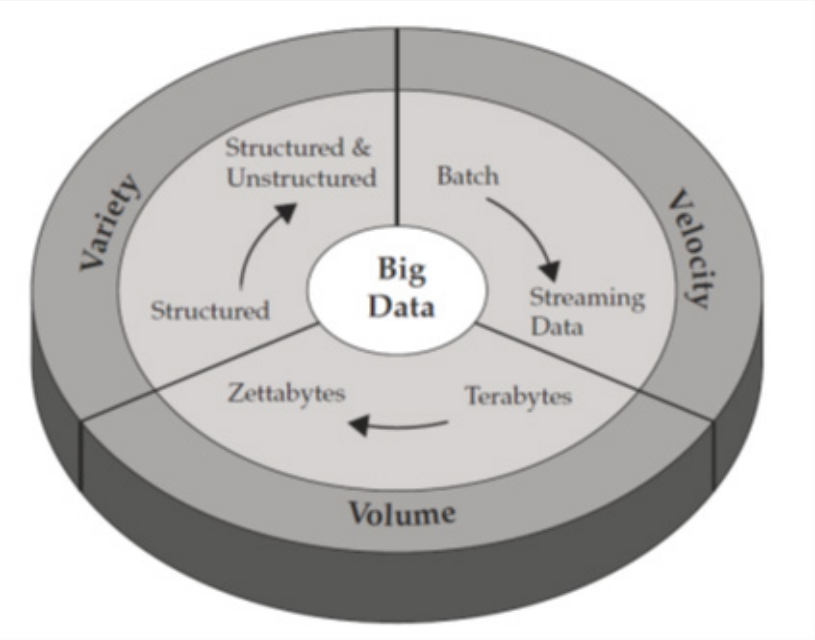
Big data

Is a set of data sets that are so large and complex that it is difficult to address with only one database management tool or traditional data processing applications. Challenges include capture, curation, storage, research, participation, transport, analysis, and visualization. The trend to large data sets is due to the additional information derived from the analysis of one large set of relevant data, compared to smaller separate groups with the same total data volume, allowing links to reveal “pivotal trade trends, quality of research, linking legal citations, Combating crime by guessing the places where crime is expected and determining the real-time traffic conditions”.

In a research report and a number of lectures related to it in 2001, Doug Lani, META Group analyst (now known as Gartner) identified the challenges of data growth and opportunities as a three-dimensional element, in terms of volume (data volume), speed (speed of outgoing and incoming data) And diversity (multiple types and sources of data).

Gartner and many companies in the industry now continue to use the "3Vs" model to describe massive data. In 2012, Gartner updated its definition to read: "Massive data are large, high-speed or high-volume information assets that require new forms of processing to enhance decision-making, deep understanding, and process improvement."

- Volume: The number of terabytes of data we launch daily from content.
- Variety: The diversity of these data is structured, unstructured and semi-structured.
- Velocity: How fast the frequency of data occurs, for example, the speed of deployment of tweets differs from the speed of remote sensing of climate change.



In a simplified way, it is the amount of huge information that databases such as ACCESS OR SQL SERVER OR ORACLE cannot review. For example, databases cannot handle the daily transactions of 1 billion FACEBOOK users per day or search Exabyte (one million terabytes) on an Internet page.
Large data when data size becomes a part of the problem.

This is a relatively variable issue. What is currently huge will not be so in the near future and the non-huge data is now huge in a few years. For example, the idea of BIM as a theory starts in the 1960s but did not become real because the amount of information for a small project was greater than the computers.

Reasons to appear:
Recently, there have been some things that have helped this explosion and increase in size and diversity, including:

- There are some areas where data are very large for analysis such as meteorology (weather science), genetics (genomics), complex physical simulation and biological and environmental research.
- The emergence of social networks that send a huge amount of data around the clock and with various formats.
- Low storage costs for this data.
- Laws requiring the survival of such data in databases to track criminals, vandals and infiltrators.
- The emergence of the Internet of things (IoT), which allows all devices to communicate with each other through the internet and then producing a new data, the door, the window, walls, refrigerator and everything in the home are connected to the internet and interact with it.
- 90% of data written across history was written in 2013 and 2014.
- Used to predict crime by analyzing data for past and current crimes.

Did you know that the Airbus A380 coding one billion lines each half hour ?, or let's say 10 terabytes of data, this data is generated by the engines and sensors in the plane for all the accurate details associated with the trip, and remember this is only half an hour in only one trip from only one plane.

It is all started on 2004 when Google distributed the data to thousands of smaller computers (still larger than the home computer), cheap and coordinated with Big table technology. In 2005, Google published this Big Table technology and Apache created the technology under the name Hadoop.

There are many tools used to analyze large data such as Hadoop, MapReduce, GridGain. HPCC, Storm, Cassandra.

The most popular applications are the Hadoop, created by Doug Cating and Mike Caffarella in 2005. Doug uses the name of his son's elephant. The development process was primarily to support the distribution of the Nutch search engine project. The open-source framework works on Linux, written in Java. It is easy to organize and manipulate data. Apache has opened it for free public use, and Google itself has adopted this service.

The most popular users of Hadoop:
Amazon, Akamai, Apple, AVG, eBay, Electronic Arts, Facebook, Google, IBM, ImageShack, LinkedIn, Microsoft, The New York Times, Twitter, Yahoo.

The Hadoop framework provides both reliability and data traffic for applications. Hadoop implements a mathematical model called MapReduce. The idea is that instead of sending the command or task to a single server, you send it to all the servers at the same time, and each server gives you the data it has. This data is collected and returned to you as one package, Where applications are divided into many small parts of the work, each of which may be executed or re-executed on any node in the cluster, and provides a distributed file system that stores the data on the account contract, Total movement across the mass.

Before Hadoop, system engineer has only option to solve the problem of data inflation to scale up that means to upgrade the server, increase RAM memory and increase storage capacity. Or transfer data to a new more efficient server.
This led Oracle to produce the database appliance called Exadata, a suite of devices in a single container with great capabilities. But the data remained stored in one server, a device priced at as high as $ 500,000.

After the appearance of Hadoop it is possible to work scale out instead of upgrading the server we add new servers with the same specifications or different.
And then we can see the storage capacities of all servers as one hard disk. (Hadoop).
And we can see the total memories of all servers as a single memory. (Spark).
But dealing with these large capacities is not like dealing with the memory of one device, it is necessary to use special tools from the programmers to be able to deal with them.
Hadoop: Only one big hard disk, but Spark, which relies on the Hadoop file system is doing a good work in addition to the unification of RAM memories.

Big data and BIM

BIM stands for “Building Information Modeling”, what will happen if the amount of information is much greater than the ability of any database to process.

In huge projects for a whole city, the amount of data is awesome and takes a long time for the computer to analyze in a huge city such as Cairo or Damascus, for example monitoring the traffic, directing signals and roads to reduce congestion or any sudden stop and helps in studying the traffic followability to design better roads in future cities.

Or management, analysis, and simulation of energy, water consumption, air conditioning during the operation of the building on a continuous basis.
Or managing a touristic village so, you receive notice of any immediate problem or infrastructure projects.
Or massive data management from a laser scan for a wide area.

Among the practical benefits of large data analysis is China is the discovery of 50 ghost cities and buildings that are completely empty because they were built without study. Their location is remote and inappropriate. In the study, they used the common clustering algorithm to calculate house locations and then linked those sites to another group of data about the known residential areas in order to reach the best suitable locations, and then calculated the urban density of the number of people living in the area of one hundred square meters. These data will benefit the government in making better decisions.

Also can analyze activities practiced by passengers while waiting for the aircraft to work for a better design for the terminals such as allocating a place for children.

Managing, operating, and taking advantage of the data for a smart city requires you to deal instantly with a huge amount of data that ordinary databases cannot handle.

The exhibition director Rem Koolhaas, Hon. FAIA said "All architectural elements are about to announce their support for data-driven technology" and this will increase the amount of data we need to address.
Currently, countries like Great Britain are making submitting COBie (Construction-Operations Building Information Exchange) files mandatory.
In the United States as President Obama said that all buildings designs should be available to the firefighter on a tablet.

Also, some organizations need actual information to give certificates such as the LEED Sustainable Construction Certificate from U.S. Green Building Council.

There are extensions to handle large data in the BIM such as Building Information Model Extended Markup Lan (BIMXML), as the model contains site and equipment information.

Warning: Do not use huge data unnecessarily when you know that your data will reach an extent that databases cannot do.
Warning: The massive data may collect violations of personal life and may be misused.

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How to pick a successful team – BIM Coordinator:

BIM team without a skilful BIM Coordinator is a confused team, its time is wasted, and its material losses are great"

If the meaning of the term Coordinator is a manager, I see that the word BIM Coordinator is not enough for its meaning. The requirements of this job is a distinguished experience in various architectural, architectural and electromechanical disciplines (AEC)

The BIM Coordinator job is not only the clash detection; clash detection is just a part of his/ her task.

Coordinator's task:

The coordinator is the project's balance part *, if the modeller's task is to complete its model according to the requirements of its specialization (electricity, mechanics, Civil, architectural), the coordinator's task is to ensure that all works are done perfectly in which the overall interest of the project, cooperation with the client (ex. the owner), location, and collection of information available to and from the Technical Office are achieved, taking into account the time and cost of completing the work. This will be shown during this article.

1. With Coordinators & Modellers

• I do not wish to repeat this phrase "The coordination process starts from the first moment of the model." So, the first task for BIM Coordinator is the coordination and integration of different engineering disciplines within the model, so the coordination meetings begin before the beginning of the work in the General Arrangement, which aims to determine the initial levels of the elements in the available space (the distribution of the various works within the available spaces) to allocate in the first place, and the problems of the conflicts are located. This is a great saving of time and costs, and a great avoidance of the excess and wasted lengths that arise when avoiding conflicts in different works that are done without coordination, and then deliver the results of the meetings as information to the modelling team.

- Training the modellers of the used programs, raising their efficiency in their work, providing information "about what is new in the field of work".

- Providing and developing the families and work cells required in the project.

- Providing and updating the information needed by the modellers to continue their work, such as following changes in project design in all disciplines (such as architectural modernization, material identification or material change).

- Distributing the different tasks to the modellers according to the schedules of the project and their different experiences and competencies.

- Reporting on the work of the modellers; how much they are producing, how well they are working, and what kind of problems they are facing and proposing to solve those problems.

- Solving modelling problems that modellers face such as not being able to modify the model or not knowing some commands.

2. With the Coordinator & The Model:

- Typical maintenance of the models and backup works according to BIM work protocols (eg, the Central Model Renewal and disposal of neglected links)

- Solving model problems and reporting model status (Examples of these problems: Excessive time when opening the form, some damage of external forms Revit Links

- Inspecting and ensuring that the work and model conform to BIM standard used in the project, such as matching the naming protocol system User, Naming Convention

- Reporting the LOD

- Assisting BIM Manager in preparing and developing the "templates" and the various tables required for the models.

- Ensuring the integrity and completeness of the library of materials used and arranged in an index properly for quick and easy handling.

- Converting different data to visual or visual information (such as the Visual and Nun-Model models) such as families, schedules and others.

- Detecting and resolving clash detection to suit business integration across all disciplines.

- Verifying that the project's quality standards are applied to data and information shared with other parties (BIM Collaboration Partners) or different BIM programs.

3. With the Coordinator & Technical Office

First of all, BIM team, including the Coordinator, is part of the technical staff, but with responsibilities and tasks different from the traditional tasks of the technical office. The methods of data exchange between the technical office and the other work teams (designers, modellers, site implementers, etc.) differ in different ways; for example, the exchange of data at the beginning of the work of the project relates to the clarification of the different details of the design itself, like to check the Coordinator the certainty of information available in the technical office and its enforceability so that it does not disrupt the work of the modellers or the executors in the site.

For example, the technical office takes care of the thermal loads of the AHU without being indifferent to its dimensions (such as height, width, height) whereas the coordinator cares about that information and make sure that the size of the machine suitable with the surrounding elements for installation, servicing and maintenance; so what is the value of a machine to check the required loads but not installable, operating or maintenance?

At the end of the project work, the exchange of data between the Coordinator and the Technical Office is based on clarifying the final status of as built. Through this, the role of collaboration between the Coordinator and the Technical Office is developed in an integration mode where it is in the phase of As Built. BIM team uses different tools than conventional teams by the Laser Scanner, and thus becomes BIM team and Coordinator as the data source for the technical office to draw all the data for this stage to update their different information of the project.

4- With the Coordinator & Site teamwork

The main goal of the various task activities is to continue progress in implementation at the site as scheduled without disruption or delay (this is the technical office goal as a whole), and unlike the natural activity known between the technical office and the site team, the coordinator's activity with the site team is different from the rest of the team technical office with them.

BIM team represents the production line that produces final executable panels and useful information tables, and here comes the role of the Coordinator who is the link officer between the BIM team and the website. The coordinator provides them with the results of the work of BIM team and the bill of quantities tables on which the site engineers are based on for getting different materials from the stores to start implementation. The coordinator also raises the various technical problems from the site to the team to study and provide best solutions. Besides, the coordinator receives As Built sheets from the site to update the information with BIM team and the technical office.

5. With the Coordinator & Procurement teamwork

The on-site implementation mechanism requires the availability of different raw materials used in the implementation in a manner consistent with the time sheet done for implementation, and when these materials are not available when needed, the work stops and delays occur in the schedule, which means penalty for the delay, as well as high cost of the project through paying the salaries of workers without obtaining production, and in order to avoid this, the raw materials must be supplied at regular intervals and suitable for the project schedule
This is not enough, but must be the supply and disposal of raw materials in proportion to the movement of stores.

All project workers benefit from the precise inventory possibilities offered by various BIM programs such as Revit, Navisworks and Rex and other different programs.

After the Coordinator receives the families conforming to the specification, whether from the supplier or its specifications, then he or she will create them, and after checking its specifications in the model and making sure that the model is free of conflicts and reviewed, the coordinator will create material take off schedules according to each specification and then deliver those lists arranged and indexed in the form determined by the cooperation between the Director of BIM manager and the Purchasing Manager to process applications and supply according to the agreed schedules, so there will be sequence and smooth handling of suppliers and warehouses and the process of withdrawal of materials used. It should be noted that there are programs now available in the BIM package dealing with orders and purchase schedules as well as organizing various activities for stores and financial activities, such as VICO and Nomitech.

Selecting the Coordinator

When choosing an applicant for this job from within the applicants must be sure of his skills and whether they fit the requirements of the job or not, and be sure that
His general and individual skill and skills in using the software available in the project or in your company, are appropriate skills.

Individual skills:

1 - Leadership skills.
2 - Ability to communicate with all parties to the work team.
3 - Ability to manage and control the conversation.
4 - Ability to explain and communicate his ideas clearly and neatly.
5 - Good command of the team language (Arabic, English ... etc).
6-Stability and non-confusion when faced with various problems.
7 - Preferred to be the owner of a hobby where the extra energy out (reading, travel, trips, fishing, etc.)

General Skills:

1 - Has good experience in various engineering fields (architectural, structural, mechanical and electrical)
2 - Has experience working in previous projects similar to the current project or the same type of projects for the company (airports, residential towers,
Factories ... etc).

3-Trouble Shooter
4 -high skills in the establishment and modification of Famili and baptism.
5 - High experience in resolving conflicts without affecting the different design calculations.
6-Management, scheduling and distribution of the work of his team.
7- Review and evaluate the work of his team according to the different engineering systems.
8 - Management of the BIM Library (sources and references, printed products, software, production tools, family, blocks, diploma, etc.).
9- Ability to train and raise the skills of the team.
10- Appropriate experience in dealing with different BIM protocols.
11- Good experience with participatory work (BIM Collaboration) with other parties

Computer Skills:

When selecting the Coordinator, you must make sure that he is proficient in the software - available in the project or company - that he will use, or on

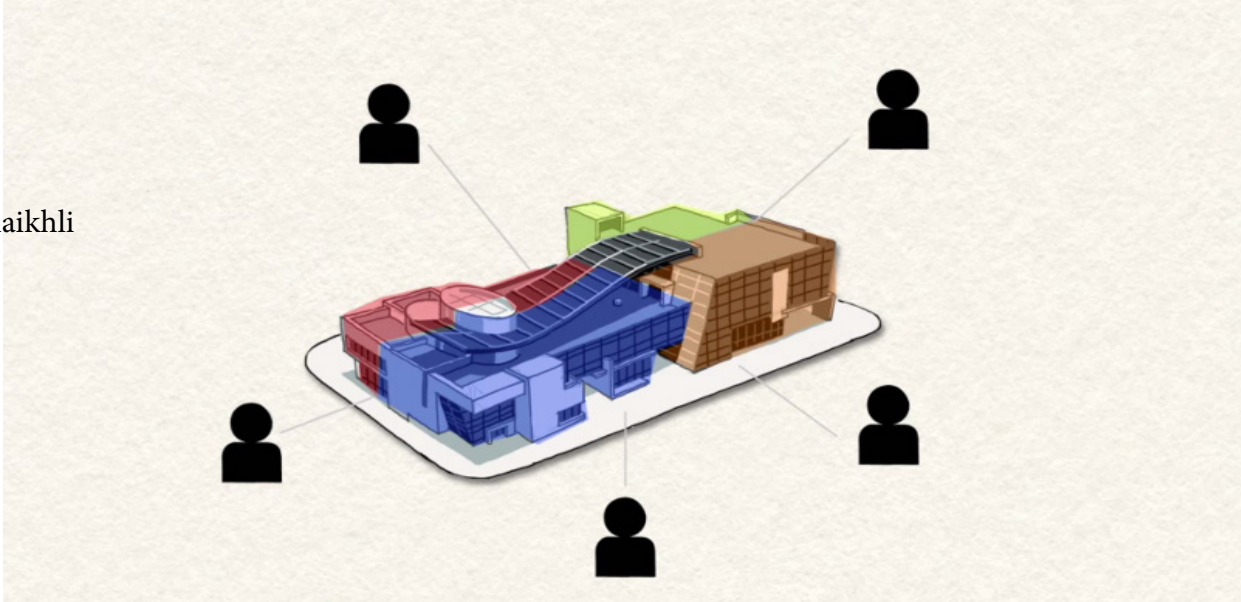
The least to be qualified for training and mastery.

Be sure to be able to use modelling software available in the company or project, as well as participation programs (ex. BIM platforms), family or cell creation programs, spreadsheet programs, database programs, programs or communication devices, there is no variance or difference between the experience of the Coordinator in engineering and his experience in using the software, both of which measure his level and experience in them. Engineering experience with no computer experience and understanding is a deficient experience that must be completed, otherwise the project will not need it.

In the next articles we will follow the method of selecting the rest of the members of the team.

Proposed structure of the Building Information Modeling Team:

kamel al-shaikhli



The contact with the construction sector at different levels of administrative vision, in addition to the intersection with the field of building information modelling has generated the nucleus of ideas listed below of how a team is structured in building information modelling. Experts cannot hide the possibility of using BIM as a philosophy by one person who do all the work on this subject and the more likely belief is the success of this person covering much of the dimensions of this philosophy, but the question is is it possible for this person to accomplish more than one project at the same time? At this point the need arises for a team where detailed roles are distributed, illustrating the powers and duties of each team site and that the structure of this team naturally varies depending on the workload and the depth required by the dimensions of BIM. This article suggests specific sites for BIM structure, and proposes guidelines for initial division of work according to needs.

The division of the associate is divided into three main levels, Figure (1):

1 – The Modeller: this represents the building blocks of the structure of the company and has enough technical knowledge of the platforms that are assigned to work with complexity of information required in each centre. His responsibility is defined within the group framework as if the group is responsible for the introduction data on structural materials and their precise details such as physical, mechanical and shape properties.

2- The Leader of the group: this represents the link between the management and the models involved under his command and has the knowledge of a very large vertical and horizontal technology on the platforms in which his group works in comparison to the models, in addition to a certain amount of information in the work of the other groups. He understands the needs of other groups and determines the path of his own group and conveys a clear picture to the decision maker at meetings that are carried out among the various leaders of the totals. Where his responsibilities include taking technical decisions on the problems of the group under his command. Also, he defines the context of the work ethic, such as the definition of the method of naming objects involved in the process of information construction, which provides easy access to it before the rest of the aggregates are additionally easy to produce by the responsible group.

3- The Model Manager: This represents the information downstream of the integrated model production process, which compensates for its limited technical knowledge of building modeling information with broad knowledge in the field of project management, where he is responsible for collecting work threads from various groups and taking decisions based on information derived from these groups in order to serve the highest interests of the work.

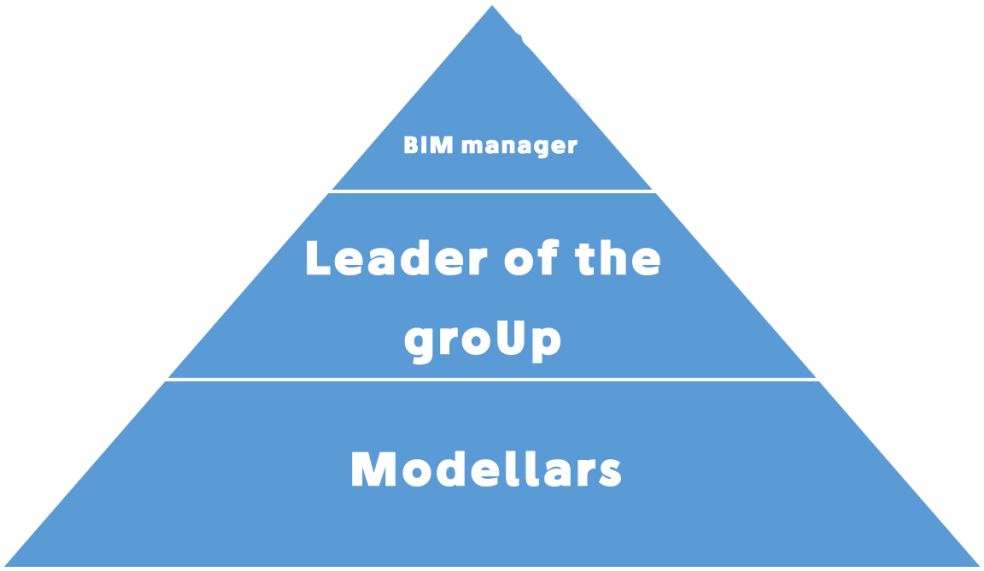


Figure (1): Hierarchy of Associates in the Organizational Structure of the Building Information Modeling Team.

The part related to building information modelling under the head of the model manager can be divided into a set of general sections that may increase or decrease as required by the institution, Figure (2), as shown below:

First: - Design Section:

This section is mainly responsible for the implementation of the third dimension of building information modeling, including 3D designs. The main work in this section is divided into two groups:

1 - Basic Design Division: It shall be responsible for producing the final integrated model from architectural, structural, electrical, and mechanical and health aspects. It includes the following totals:

a) Architectural group: It is responsible for assembling architectural units in a particular design for the purpose of producing the architectural model.

b) Structural group: It is responsible for structural design (dimensions of columns and bridges), beams, reinforcing measurements, concrete mixtures, and the introduction of structural units such as bridges and columns, etc. on the architectural model to serve the structural design.

c) Construction Services Group: It shall be responsible for the engineering design of the service units (such as cooling distributors and electrical and healthy structures) and the introduction of the architectural model to serve the healthy, electrical and mechanical designs.

2. Secondary Design Division: It shall be responsible for the production of the units involved in the integrated model extraction process. It includes:

a) A group of materials: responsible for the production of structural and non-structural materials involved in the process of model construction. Its work involves the introduction of complete information on each material, which may include physical, formal and cost information
And any information required by the model to serve the general philosophy of transforming the reality into virtual reality.

b) Architectural Group: responsible for the production of architectural units such as wall details, door details, windows, ceilings and others.

c) Structural Group: responsible for the production of structural units such as bridges, columns and related reinforcing details as required by the structural design.

d) Service Group: responsible for the production of sanitary, mechanical and electrical units and their information as required by electrical, mechanical and sanitary designs.

Second: - Project Management Department:

This section is mainly responsible for the implementation of the fourth dimension, the fifth dimension, the seventh dimension and the eighth dimension of building information modelling including time, cost, organization management and risk management (in order) The following people:

1 - Division of Time and Cost: This Division is concerned at the beginning of work to schedule the project and calculate the cost and then add the management of acquired value The division starts by monitoring the cost performance index and time performance index as well as monitoring the deviations in scheduling and cost.

This Division implements the fourth and fifth dimensions on the project.

2 - Division of Surveillance and Safety: This Division is concerned before the beginning of the project to study designs and approved in terms of safety or what is known
(PtD) and then moves on to follow safety controls as well as security monitoring of the project

This division is one of the people applying the seventh dimension and the eighth dimension to the project.

3 - Human Resources Division: This Division deals with the established responsibilities of human resources management from the knowledge, distribution and operations of cadres Archiving and documentation. Where this division is one of the people involved in the application of the seventh dimension to the project.

4- Maintenance Division: The responsibility of this Division is at the design stage to ensure that facilities of origin can be maintained and certified
The Division continues its work in maintenance throughout the period of utilization of the project. Where one of the people is involved in applying the seventh dimension on the project.

Third: - Sustainability Section:

This section is primarily responsible for implementing the sixth dimension of building information modelling, including sustainability engineering and environment. In this section, the main divisions are:

1 - Energy Analysis Division: This division is concerned with studying the distribution and analysis of energy and reducing consumption as much as possible and how to deal with this theme in terms of design.

2. Green Alternatives Division: This division is concerned with studying the possibility of using certain alternatives that are more economical in terms of different energies.

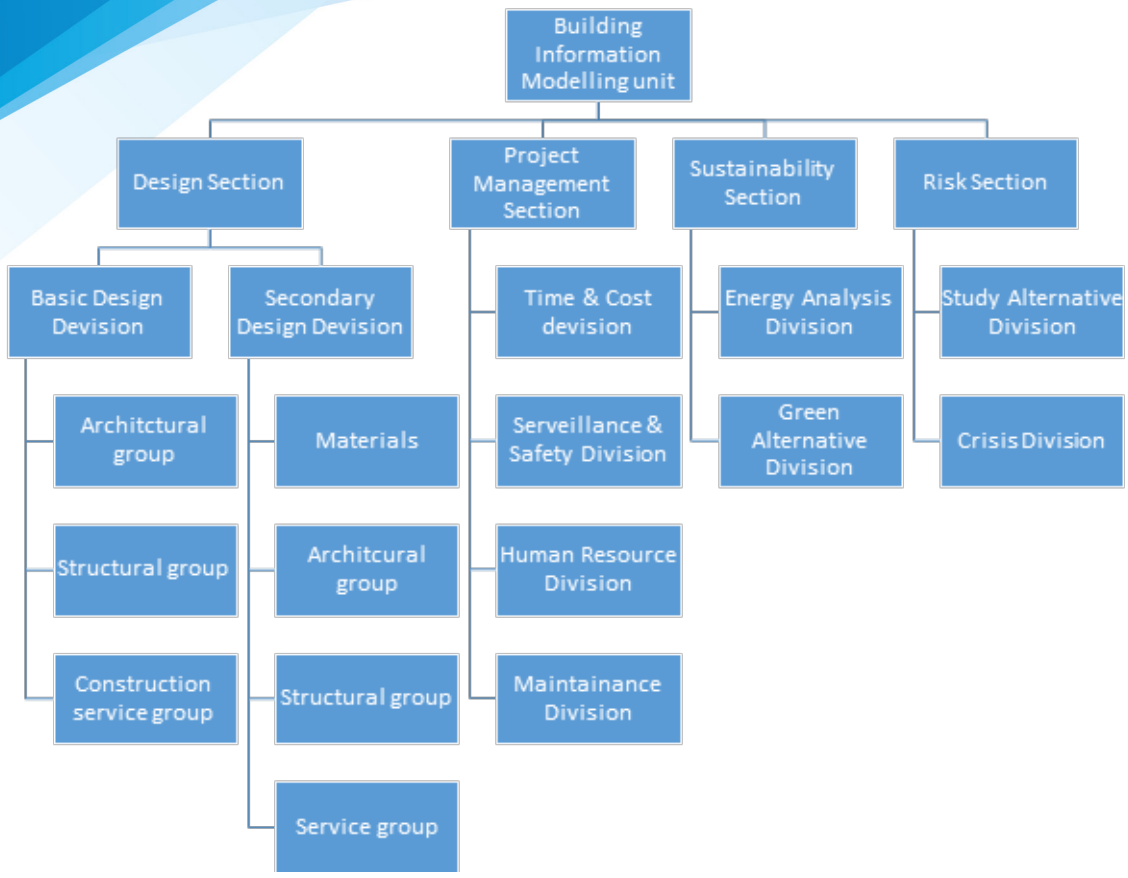
Fourth: - Risk section:

This section is primarily responsible for applying the eighth dimension of building information modeling and risk management.

In this section, work is mainly divided into two divisions:

1 - Division of Study Alternatives: This Division is concerned with studying the possibilities of financial and non - financial benefit and the difference between the alternatives offered in the treatment; such as the difference between the payments of financial dues resulting from delay or the transfer of risk to the secondary contractor.

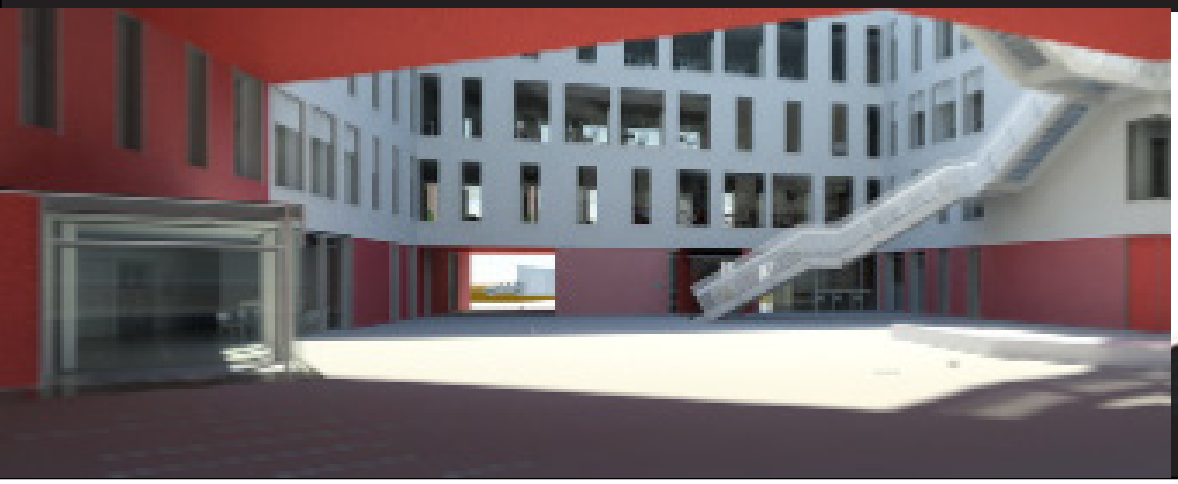
2 - Crisis Division: It is concerned with the development of plans to address problems that occur during work and intervention in treatment. Such as problems resulting from work injuries, delay, or work in hazardous areas or otherwise.

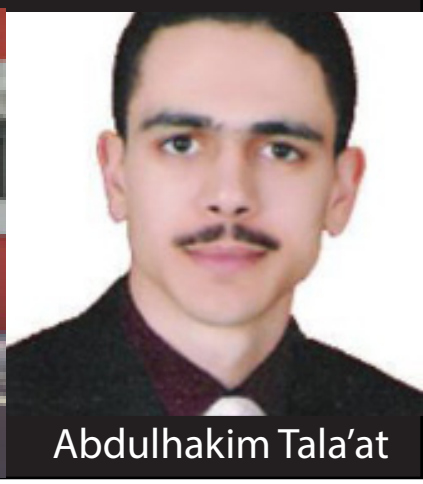


Image…
Figure (2): The structure of Building Information Modelling Unit.

It should be noted that the proposed proposal is a proposal for guidelines that are subject to change as required by the working conditions and as it sees fit the decision maker after study and discussion.

Brainstorms 2: The coordination between architectural and structural in the design phase "through the Revit programme"





Abdulhakim Tala'at

In the initial project design phase often the architectural team starts individually in designing the project on the programme without interference from other departments and at this stage the team takes upon him the construction of structural elements of tiles, walls and columns. When the design becomes semi-final, the structural team begins to calculate loads and adjust the dimensions and locations of the structural elements more accurately.

But let us ask how the structural and architectural work teams interact at this time of the project, whether he makes a local copy of the same architectural file with the ownership of the worksets of the structural elements through the ownership, or makes a new file in which all the structural elements are copied while the architect removes them from his own file.

In fact, there is not one correct answer because all options are available and each option has its own advantages and disadvantages, but must be taken into consideration before going back to any of the presented options a number of considerations - to control the work between the architect and the structural enginner – including:
- Project size, area and complexity.
- Number of team members who build project, BIM Modelers.
- Method of dividing the project, where it is recommended to divide the project so that the file does not exceed 200 to 300 megabytes depends on the possibilities of used computer and the number of users per file is 6 or 8 individuals at most.

The first solution might be the best choice especially with small projects and few users and it is more appropriate in case of the presence of architectural and structural work teams in one place. Even with large projects, we can use the first solution if the project is divided to parts instead of dividing by specialization.

But let us take the second solution in detail as it is the common choice between consulting firms due to the advantage of dividing the responsibility and specify it without overlapping in the specializations. With this choice, the stage of structural engineer intervention with the architect in the design phase can be divided into two stages, design modification stage and stability on design stage.

Phase 1: Design Modification Phase

At this stage, the architect is involved with the structural engineer in a number of structural elements, such as:

1 - The tiles and the openings, the architect is responsible for the external dimensions of the tile and shafts and structural engineer is responsible for the thickness and making the structure for it, therefore it is suggested that the architect make a pilot tile in the entire area of each floor (dummy floor) with the shafts in the architectural file and then the structural engineer copies them into the file (copy/monitor) only to track the architectural changes where it is committed to make several other structural tiles in the same floor due to different thickness of the tile and their type from space to space according to the proposed structural design system.

2 – Retaining walls and Shear walls: The structural engineer copies these walls at this stage (monitor / copy) and informs the architect with the thickness of the final walls and in the same time monitors the architectural file through the "coordination reviews" when any changes occur in the locations of these walls or any openings, such as, doors.

3 - Columns: The architect may need to move some columns at this stage according to modify the architectural design for some spaces and in the same time the structural engineer is responsible of its dimensions and location, so it is most appropriate at this stage (the stage of modification) the structural engineer copies the columns (copy/ monitor) and to inform the architect of any changes in the dimensions of the columns and at the same time follow the file through (coordination reviews) for any changes in the column locations.

It is important to note that the changes made by the architect at this stage will alert the structural engineer by messages (coordination review) automatically in the deletion or modification cases only for existing items, but when adding a new structural element, the engineer must be alerted to copy and add it to its file (copy/ monitor) again.

Phase 2: Stability on Design

After a certain period of the project, the work team will most likely agree on a certain date that will be a new plan (frozen plan) which allows the architectural and structural work teams to continue to work in a stable manner and to begin to include details and finishes and to start involving the rest of the work teams , such as, MEP engineers and coordination of the site. . . etc.

This question may arise as to how effective this shared responsibility for structural elements between architectural and structural engineer, where it may be the most appropriate at this stage to transfer the full responsibility to the structural engineer, and the architect will delete all structural elements in the architectural file and rely only on the structural file (as a link) to be displayed, and at the same time the structural engineer makes (stop monitor) for all structural elements that previously copied.

However, before the architect has removed all the structural elements from his file, he must take into consideration the architectural openings that exist in concrete walls so they are not removed either, but what is the means to keep these openings and remove the concrete walls? Maybe the solution is not to remove these walls and continue to activate the shared responsibility - or we may use another solution, like we keep the architectural opening only on a dummy wall same as the size of the architectural opening only.

As we mentioned at the beginning of the article, all options are acceptable so there is no one typical solution to be followed because the solutions are often differentiate by according the nature of the project, its size, the stage it is going through, the nature of the contractual relationship between the parties and other variables.

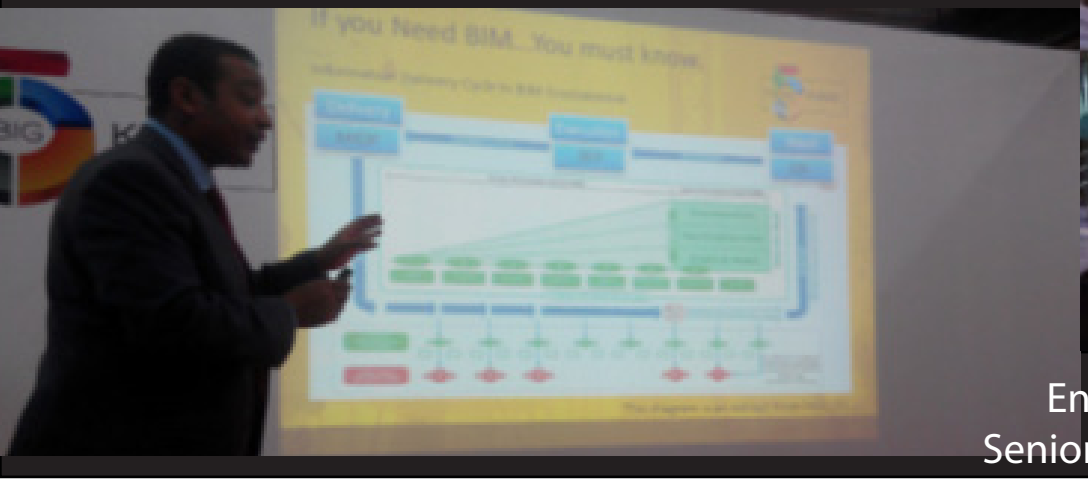
The article has ended today and hopefully the next one with the theme of “Coordinating the work on the false ceiling between architects and MEP engineers”

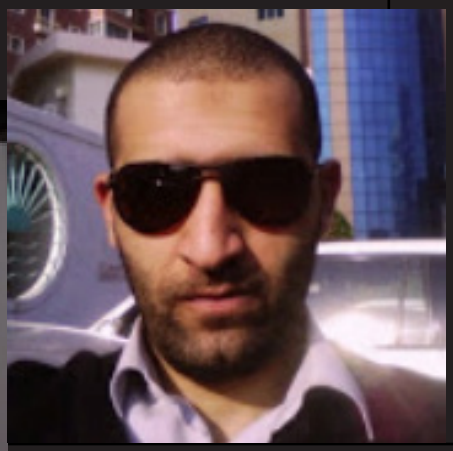
As we used to, dear reader, you can within 20 days of issuing this version of magazine to develop a vision and giving ideas of how coordinate the work and how to sequence between the various departments to ensure the eventual production of work without conflicts and the least effort without re-work or waste of time. And you can send these ideas and solutions to this email:

bimarabia@gmail.com

All sent ideas and solutions will be studied, sorted and evaluated, with the values to be presented in the next issue with the more appropriate proposal.

The Big 5 Exhibition and Building Information Modelling





Engineer Ahmed Ghareeb
Senior Planning and Cost Control

What is the Big 5 exhibition?

The Big 5 is the largest trade fair in the Middle East for building products and materials, and with its history for three decades, it attracts more than 2.800 exhibitors from more than 60 countries and it is attended by more than 80.000 professionals in the sector. As well as, many useful lectures and scientific seminars are held in this exhibition.
For the third time in a row, Kuwait was chosen for the exhibition at the end of September 2016, as Kuwait is in the way of implementing many mega projects that require progress in the field of construction by hosting such exhibitions.
Kuwait and Building Information Modeling?

Kuwait is one of the countries that seeks to establish many mega projects for the benefit of homeland and the citizen. As Building Information Modelling (BIM technology) is important in the field of construction; many ministries, institutions, agencies and consultancy offices have imposed BIM technology in the implementation of mega projects.

Therefore, there are a lot of mega projects where the use of BIM technology has been imposed, including but not limited to:

1- The Jahra Hospital Project,
2. The new Cancer Hospital Project,
3. The hospital of communicable diseases,
4. The new National Bank of Kuwait Tower.

Day 1: Introduction to BIM

The speech of Dr. Adel Al-Saffar on the first day is about the advantages and importance of Building Information modelling technology, and how this technology is very important during a life-cycle of any engineering project. One of the beautiful things that have mentioned by Dr. Adel Al-Saffar,is that Building Information Modeling technology is not confined to a Revit programme as known by most of people, however Revit is one of the programmes that work in the technology of Building Information Modeling. And he explained what are the 3 dimensional, 4 dimensional, 5 dimensional design? and etc.

Day Two: Practical application and investigation of BIM

A room full of audience who were eager to hear more about Building Information Modeling. Engineer Saleh Omar Omran (BIM Manager Projecs egis international) spoke about one of the problems of Building Information Modelling in engineering projects is to verify the validity of the model from one stage to another and make sure the suitability of the model for being used at each stage. Does the model represent the last owner's requirements or no?
Finally, he described the simple steps to be taken at all stages of the project and the people who are responsible for the assessment. The conclusion of the steps was to verify the validity of the data inside the model and its suitability to the stage both in design and implementation, in addition to verifying the model in the part of the blocks and finally coordinate all parts of the project. Also he spoke about the work environment in the second and third levels in the British code pass 1192-2.

Comments & Reviews about BIM Technology:

After talking about BIM technology, how it is applied and constantly investigated, there were many different opinions and comments with regard to the subject of BIM, for example:

- It is difficult to apply because of the limited specialists in this field in the Kuwait market in particular and in the Arab market in general.
- At the beginning of its application, BIM technology takes a long time to get used by people.
- BIM engineers are high salaries compared to other engineers.
- The BIM always depends on the teamwork environment and will never succeed with individual work whatever its abilities, teamwork or within a group in the Arab countries in general needs further development to reach the required level, in addition to the BIM's need to a server to connect the different models of the building to the central model.

BIM Solution

- ## Avoid Clashes

This tool is designed to easy detect and highlight the clashes between Autodesk® Revit® Elements, helping users to avoid clashes.

The tool will detect and highlight clashes in your files between the modeled elements and all links.

Updated release of this tool will include real time update (it will detect clash as soon as user placed any element).

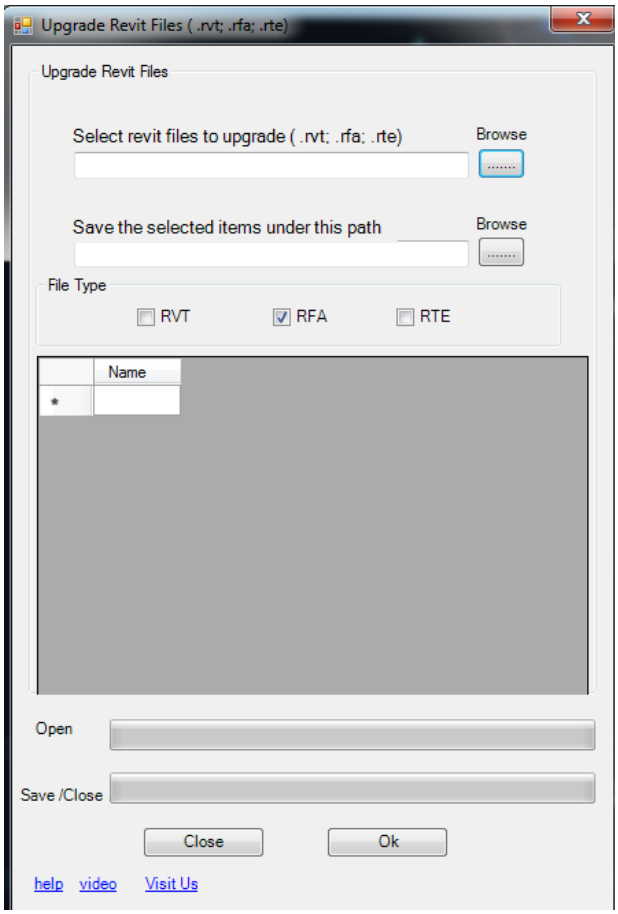
- ## Super Hangers

This tool is designed to place hangers along the (Ducts, Pipes, Conduits and Cable Trays) automatically.
The tool will do the following updates:

-The tool has many hangers' styles.
-The tool can place the hangers along the elements (DUCTS, PIPES, CABLE TRAYS, and CONDUITS) automatically.
-The tool can place one hanger only on an element (if needed).
-The tool can select the hanger upper level automatically
-The tool will change the hanger size due to the change in element size.
-The tool will change the hanger offset due to the change in element offset.
-The user can choose to enter the distance between hangers in mm or inches.
-The tool can move the hanger to follow the moving elements.
-This tool can work with sloped elements.
-The tool can work with slanted elements.
-The tool can delete the hangers related to specific duct when you delete the duct.
-The tool can place the first hanger and specify the distance between the first hanger and fittings.
-The tool detects insulation and works with it.

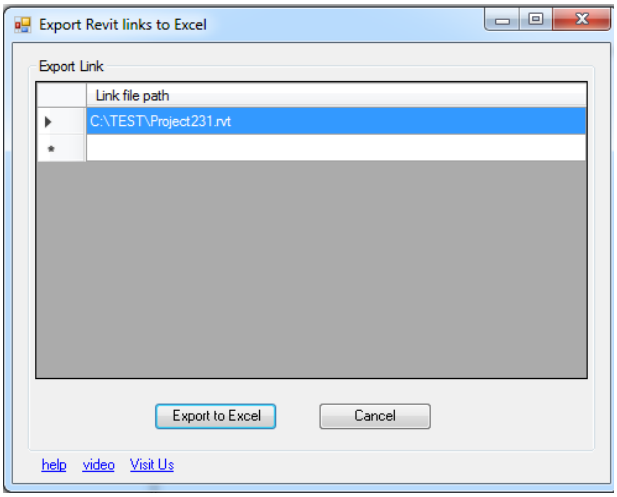
• Upgrade Files

This tool will upgrade previous versions of Autodesk® Revit® files to the latest Revit format. The tool can upgrade families, template files, and project files.
This will reduce the time used in upgrading it manually.



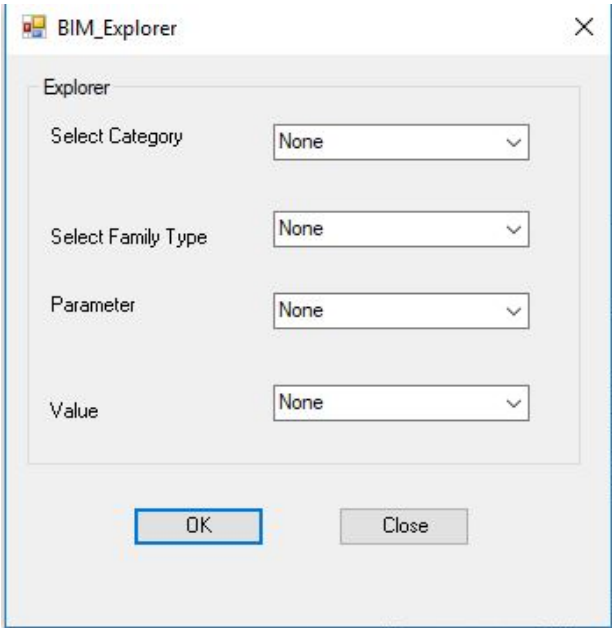
• Export Link Path To Excel

This tool is designed to export Autodesk® Revit® link file's paths to Excel.
It's very useful, especially for large projects with many links.
You can also use it to check the linked file's paths.



• BIM Explorer

The tool is designed to select Autodesk® Revit® elements by specific criteria like (type name, or data under specific parameter)
It will save a lot of time used in search elements



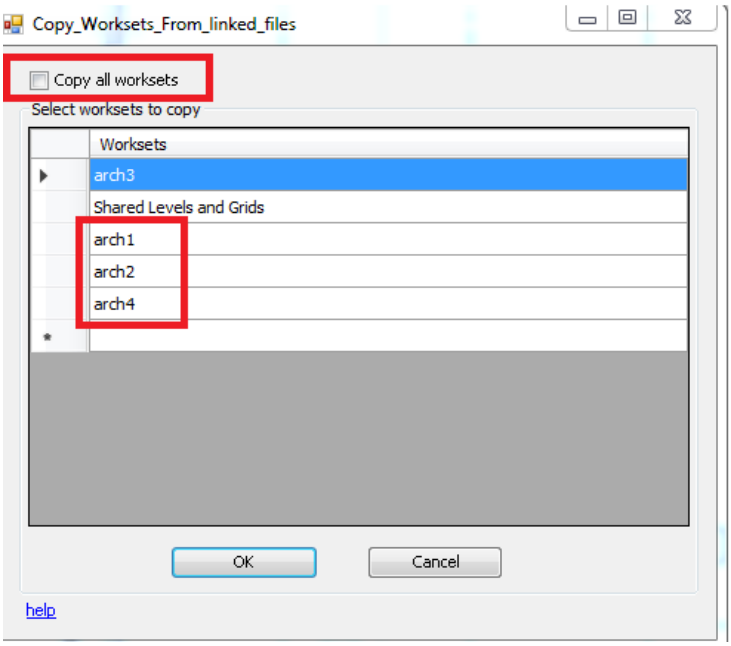
• Compare and fix levels elevations

This tool is designed to compare the linked file levels with the current project levels.
It will check the level name and elevation.
It will fix the level elevation to match the linked file levels elevation.

• Copy Work sets From files

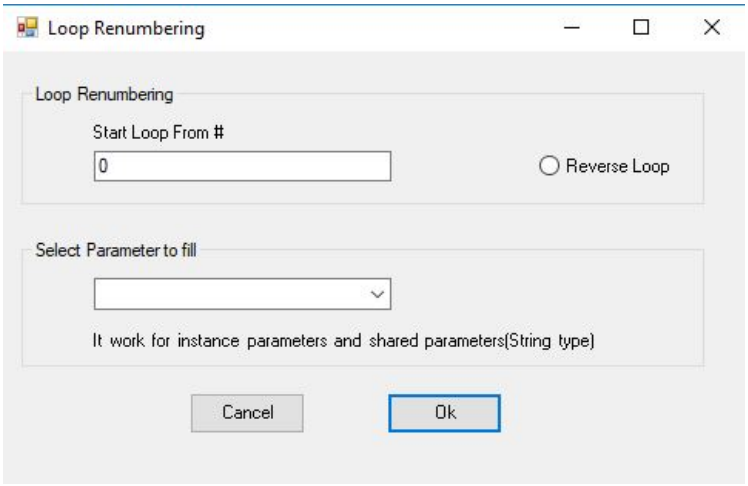
This tool is designed to copy work sets from file.
Generally, Autodesk® Revit® users have to manually create worksets, This tool will enable you to use any file which contains your old worksets to copy the worksets names from it.

2. Run the tool
3. The tool will show the worksets of all linked files
4. Select to copy all workset or select specific worksets
5. Press OK



• Renumber Elements

This tool is designed to give sequence numbers for Autodesk® Revit® elements.
It will save you a lot of time renumbering the elements one at a time.



• Door (From Room / To Room) 2017

The tool is designed to automatically copy the room data to doors especially (From Room and To_Room).
The normal way is modifying the data for each door one by one; this tool will automatically do the process.

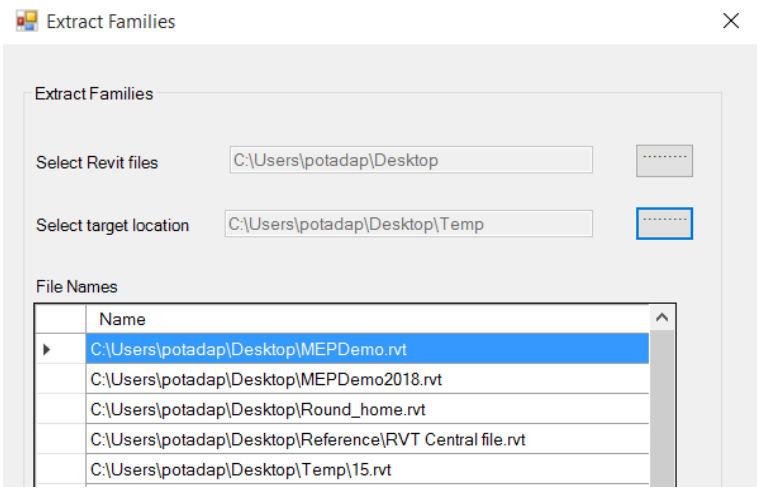
.

• Create Worksets from Excel

The tool is designed to create worksets from Excel list.

This will save time when creating worksets in Autodesk® Revit® and facilitate the workflow, especially when you have standard workset names stored in an Excel file.

• Batch extract and categorize families

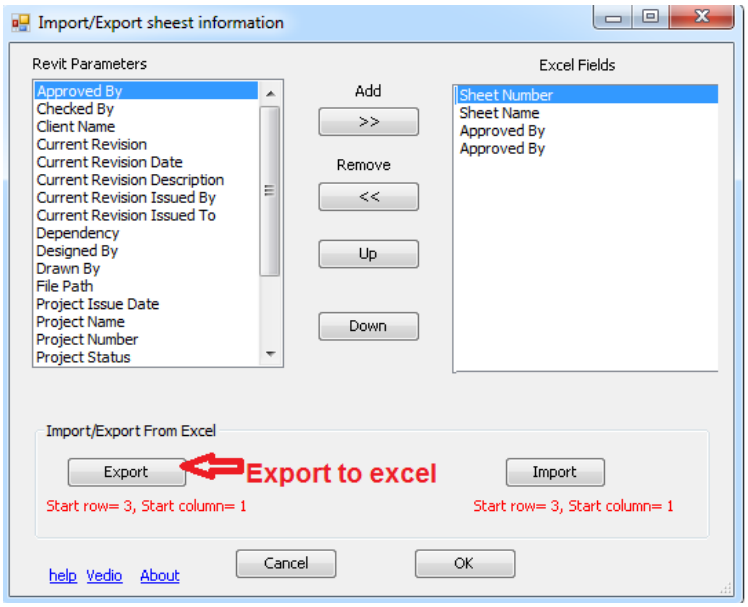


This tool is designed to extract the families from Autodesk® Revit® files and place it in folders according to their categories names.
This will save time used in opening each file alone and extract the families, then place the families in the folder according to the category name.

Excel BIM Link

The tool designed to import/export data from and to Excel file.
The tool will save a lot of time by transferring the from Excel and from Autodesk® Revit® to Excel.
Watch the video: https://youtu.be/cMo98jAyCxI

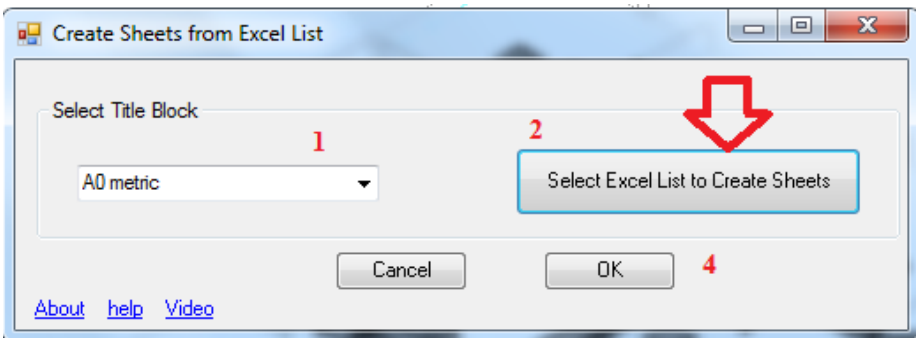
Note: Do not edit 'ID' column after exporting the parameters to Excel.



• Create Sheets from Excel List

This tool is designed to create sheets in Autodesk® Revit® model using existing Excel sheet list.
Workflow:

1. Choose title block type to create the sheets.
2. Click Select Excel List to Create Sheets button.
3. Browse and select the Excel sheets list.
4. Click OK button.

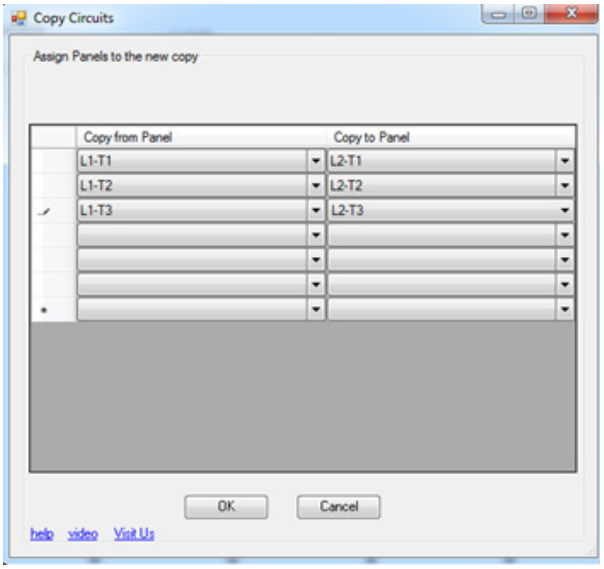


• Batch Rotate Family

The tool is designed to batch rename or modify family names inside Autodesk® Revit®.

This will facilitate the process of maintaining standard family names inside your project
Please note: Application works for only loadable families.

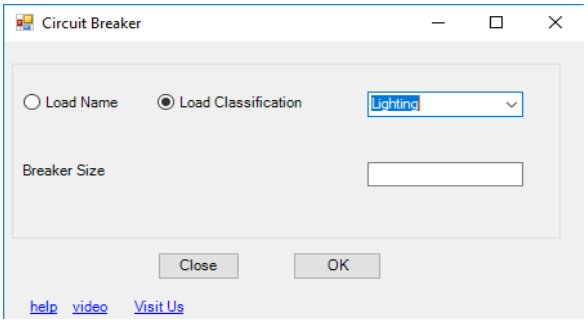
• Copy Electrical Circuits



This tool is designed to copy electrical circuits from floor to floor or in the same floor.

The app will save a lot of time for electrical engineers, in case they need to copy the electrical circuits.

• Batch change circuit breaker size



The tool is designed to automatically change the
circuit breaker size according to the load name or load classification.

The normal way is modifying the circuit breaker data for each circuit one by one; this tool will automatically do the process.

General Usage Instructions

1. Run the tool

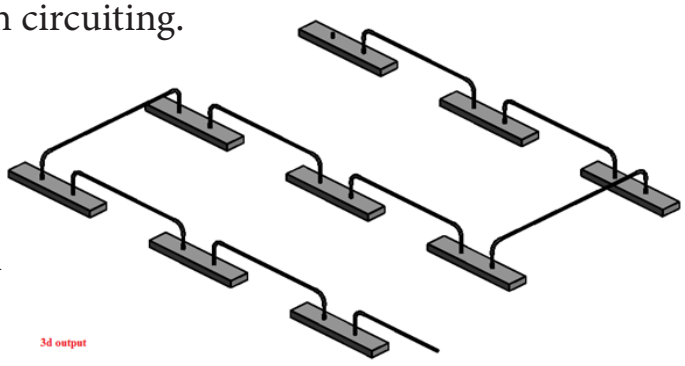
2. Select if you want to select by load name or load classification

3. Write the desired circuit breaker

4.Press OK

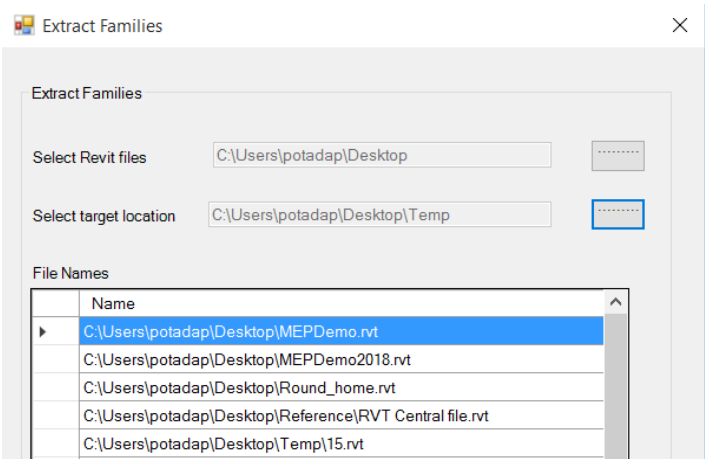
• Automatic Conduit

The tool is designed to create power circuits and connect fixtures with conduits instead of Autodesk® Revit® default 2D wire.
Work Flow:
1. Select the desired elements.
2. Click the Automatic Conduit command with circuiting.
3. Write the needed offset for the conduits.
4. Choose the connection method
a) Loop Conduits
b) None loop Conduits
5. Choose the home run direction and click ok
6. Select a panel for your circuit
a) Loop Conduits
b) None loop Conduits



• Convert Wire Size

The tool is designed to convert a wire size from American Wire Gauge to square millimeters.
Autodesk® Revit® generates the wire size with AWG and this tool converts the AWG wire size to mm and place the value in the shared parameter under the circuit.
Users can edit the electrical template and show the wire size in mm instead of AWG.



• Batch extract and categorize families

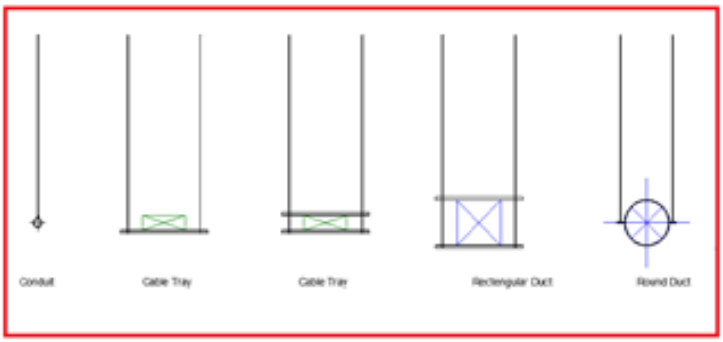
This tool is designed to extract the families from Autodesk® Revit® files and place it in folders according to their categories names. This will save time used in opening each file alone and extract the families, then place the families in the folder according to the category name.

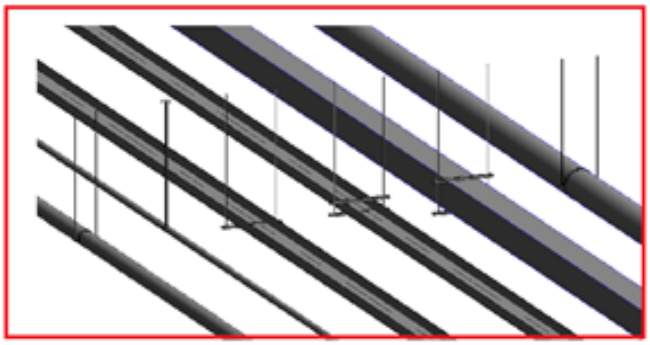
• Duct and Pipes

This tool is designed to place hangers along the (Ducts, Pipes) automatically.

Version 1.1.0

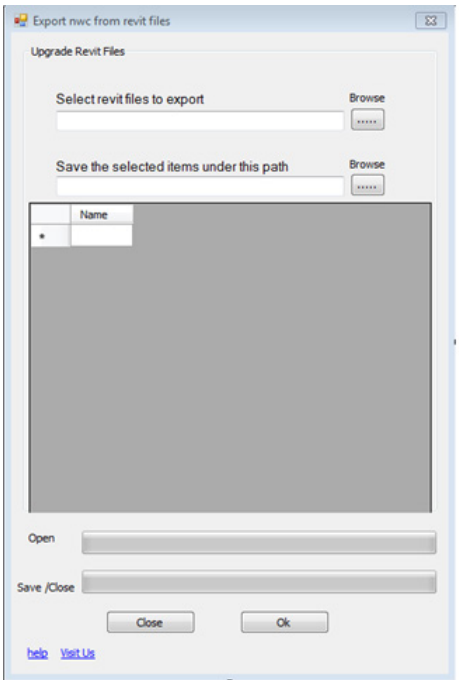
Adding different support types





• Batch Export NWC

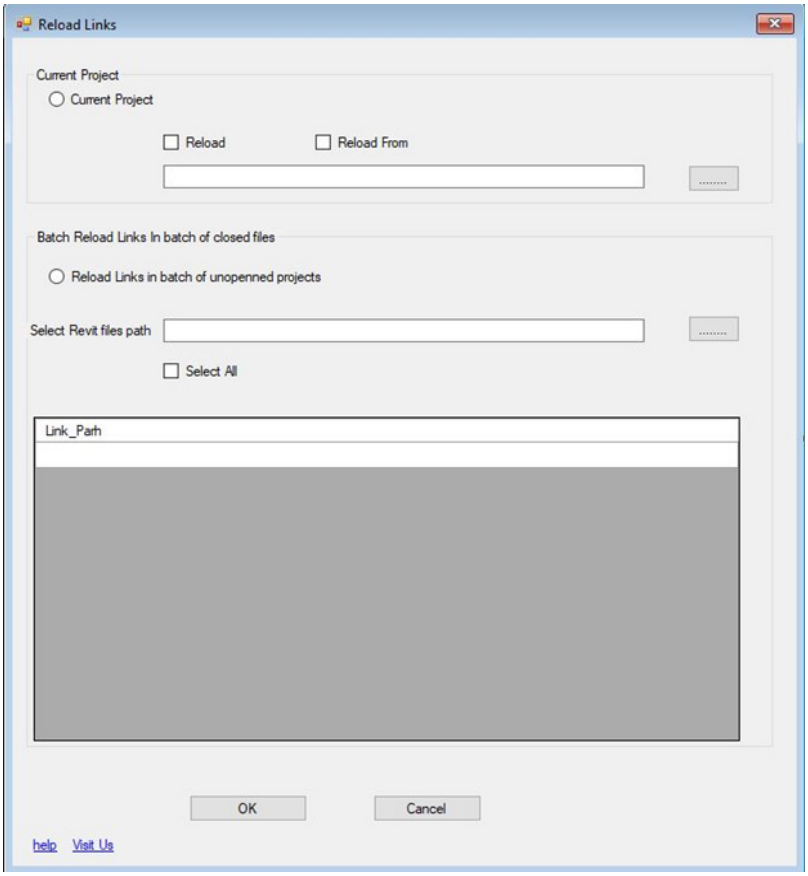
The tool is designed to export Autodesk® Revit® models to NWC. The application will open the Revit files and it will export it to NWC and close the files.
The application will save a lot of time.
The application require Navisworks manage to be installed in your machine, The Navisworks version is the same as your Revit version.



1. Place the files which you need to export to "nwc" in one folder.
2. Open one of the Revit files which you want to export from the same path which all the .files exist.
3. Run the tool.
4. The export "nwc" interface will be shown.
5. Select the path of Revit files.
6. Select path to save the extracted "nwc" files.
7. All the files will be exported to "nwc".

• Batch reload Revit_Links

This tool is designed to reload links in the current project or in a batch of Autodesk® Revit® files.
This will save a lot of time.



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Conclusion

Thanks to Allah, and his kindness and mercy,
The 13th edition of Bim Arabia magazine is issued.
It was a struggling journey to provide good Arabic content for you
This is only a small effort; we always seek perfection in it, and we have done our best to make it our goal. If we make mistakes we have the honour of trying and learning
We do not say more than what Imad al-Isfahani had once said:
I saw that a man will never write a book without saying if I changed this, it would have been better, if I left this, it would have been nicer, and this is one of the greatest lessons on all human beings that all are seized by imperfection.
And Omar ibn al-Khattab , God pleases him, said : (Allah have mecy on a man who shows me my faults)
And was told to one when he was retired and recluse: why are avoiding contact? And he said, "What shall I do with people that hide from me my faults?"
So please my dear tell me by sending on the magazine website or e-mail what you liked, what you didn't like, and what you wish to be repeated in the coming editions so we can develop our work to be a reference for scientific research.
We invite you to participate in submitting an article or a summary of a book or a conference on BIM.
And finally after we have progressed smoothly in this broad field We hope to be accepted and appreciated...

13th Issue 2018

BIMarabia